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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/336,687 06/21/99 YOKOGAWA K 500.37328X00

020457 IM62/0103
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EXAMINER

ALEJANDRO MULERO, L

ART UNIT

PAPER NUMBER

1763

DATE MAILED:

01/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/336,687

Applicant(s)

YOKOGAWA ET AL.

Examiner

Luz L. Alejandro

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 30, 37-49, and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29, 31-36 and 50-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s): _____
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 20) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 1-29, 31-36 and 50-53 in Paper No. 5 is acknowledged. The traversal is on the ground(s) that the claims are not distinct from each other. This is not found persuasive because the claims are directed to different inventions. As stated in the previous Office action, the apparatus of claim 1, as claimed, can be used for other processes such as depositing or cleaning. Moreover, the apparatus can be used for processing the sample at a different power frequency and power density than the one claimed in claim 30. In addition, different examination and considerations are required when considering apparatus and method claims.

The requirement is still deemed proper and is therefore made FINAL.

Claims 30, 37-49 and 54 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Objections

Claims 7, 17, 23, 33 and 35 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only--, and/or, --cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 8-16, 18-22, 24-29, 31-32 and 50-53 are rejected under 35

U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed control means for introducing the electromagnetic field, for setting distance between the plate and the sample, and for controlling the quantity of reaction between a surface of the planar plate and radicals in the plasma, is not described in the specification. Also, the limitation of the electromagnetic wave supplied resonating in transverse magnetic mode (TM) 01 in a dielectric substance enclosed between the planar plate and the earth-potential plate (claim 21) has not been described in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 8, 10-12, 21-22, 24-29, 32, 34 and 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al., U.S. Patent 5,891,252.

Yokogawa et al. shows the invention as claimed including a plasma processing system for use with a surface processing apparatus in which a vacuum chamber 101 includes a vacuum generating means (see figure 1 and col. 4, lines 35-40); source material gas supply means 120 having the claimed characteristic of claim 12; sample setting means 111; high-frequency power applying means; the source material is transformed into plasma to achieve surface processing of the sample 110; means for generating the plasma including electromagnetic wave supply means 104; magnetic field generating means 102; means 112 for making radicals incident to a surface of the sample; and means for reducing variation in time of the radicals incident to the sample; wherein the apparatus introduces electromagnetic field from a planar plate 107, the planar plate being disposed in parallel with the sample into the vacuum chamber (see figure 1), and is set to be separated from the sample by the claimed distance (see col. 7, lines 53-59). Examiner takes official notice that main control means are well known

and used in the art to precisely controlling the desired apparatus and/or process parameters, and therefore it would be prima facie obvious to modify the apparatus of Yokogawa et al. as to further comprise such a control system.

With respect to the diameter of the planar plate, the reference in col. 4, lines 49-54, discloses that it varies depending on the resonance mode of the electromagnetic wave. In col. 4, lines 41-43, the reference disclosed that the electromagnetic wave to generate the plasma has a frequency ranging from 300-500 MHz; in col. 5, lines 5-64, the reference discloses that the electromagnetic field generated satisfy the ECR condition, the use of means 116 for generating electromagnetic wave of 300 kHz frequency onto the planar plate, the use of means 114 for controlling the temperature of the planar plate, and the claimed surface material of the planar plate of claims 10 and 26-27. With respect to claim 22, the limitations are disclosed in figure 2 and its description. With respect to the electromagnetic wave characteristics of claims 21 and 32, it would have been obvious to one having ordinary skill in the art at the time the invention was made that such characteristics can be achieved by controlling the parameters governing the electromagnetic wave and ECR conditions.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al., U.S. Patent 5,891,252 as applied to claims 1-8, 10-12, 21-22, 24-29, 32, 34 and 50-53 above, and further in view of Gupta et al., U.S. Patent 5,902,494.

Yokogawa et al. is applied as above but lacks anticipation of showing a planar plate including a plurality of holes through which the material gas is supplied. Gupta et

al. discloses a plasma apparatus similar to the apparatus of the Yokowaga et al. reference and in which the planar plate 11, to which mixed frequency can be supplied, is a gas manifold through which the gas is introduced to the processing chamber (see figure 1 and col. 4, lines 29-34). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus disclosed by the Yokowaga et al. reference by introducing the gas material through holes in the planar plate since such gas inlet configuration is well known and used in the art for uniformly dispersing the gas material to the chamber.

Claims 13-16, 18-20, 31, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokogawa et al., U.S. Patent 5,891,252 as applied to claims 1-8, 10-12, 21-22, 24-29, 32, 34 and 50-53 above, and further in view of Mizuno et al., U.S. Patent 5,893,962.

Yokogawa et al. is applied as above but lacks anticipation of showing the claimed ring-shaped member. Mizuno et al. discloses a plasma apparatus similar to the apparatus of the Yokogawa et al. reference, and in which a ring-shaped member 21 is disposed in a periphery of the sample, includes a surface to be brought into the plasma, is applied with high-frequency power 30 (see figures 1, 3A-3C, 5 and 7, and their descriptions). Examiner takes official notice that it is well known in the art that ring-shaped member disposed around the periphery of the sample make the radicals, ions or plasma species incident to a surface of the sample, also it is well known to make such

members of the claimed materials. Note that the high-frequency power 30 is connected to both the sample and the ring-shaped member via a matching circuit 29.

With respect to the limitations of claims 18, 19, and 31, such limitations are considered to involve routine optimization while has been held to be within the level of ordinary skill in the art. Therefore, one of ordinary skilled in the art at the time the invention was made would have modified the apparatus of Yokogawa et al. and Mizuno et al. references, by having a ring-shaped member with the claimed height and width, and by applying the power to the ring-shaped member as claimed, in order to optimize the apparatus.

Information Disclosure Statement

The information disclosure statement filed 6/21/99 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered. If applicant wishes consideration of the references, they should be listed in the form of a PTO-1449 with ample room for the examiner to sign and initial each reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-


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4545. The examiner can normally be reached on Monday-Thursday from 8:30 to 6:00.

The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills, can be reached on (703) 308-1633. The fax phone number for the organization where this application or proceeding is assigned is 703-305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700


LLAM

December 29, 2000